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CLAIMS

1. Waveguide filter comprising at least three  
5 mutually coupled resonant cavities, the filter being  
coupled to a microstrip circuit placed on a substrate,  
wherein at least one cavity lies on one side of the  
substrate and at least one other cavity lies on the  
other side of the substrate.
- 10 2. Filter according to Claim 1, wherein the side of  
the cavity lying against the substrate is electrically  
closed by an earth plane supported by the substrate.
- 15 3. Filter according to Claim 2, wherein the coupling  
between at least two cavities lying on either side of  
the substrate takes place via a slot in the earth plane  
or planes separating the said cavities.
- 20 4. Filter according to Claim 3, wherein the substrate  
is cut at the slot and the edges of the slot are  
metallized.
- 25 5. Filter according to Claim 2, wherein the coupling  
between the microstrip circuit and one of the access  
cavities of the filter takes place via a slot in the  
earth plane of the said cavity, the said slot being  
placed beneath an open-circuit microstrip line.
- 30 6. Filter according to Claim 1, wherein said filter  
comprises:  
- a first cavity placed on a first side of the  
substrate, the substrate being covered by an earth  
plane pierced by a first coupling slot, a first  
35 microstrip line being placed on a second side of the  
substrate above the coupling slot so as to couple the

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said filter to the microstrip circuit;

- a second cavity placed on the first side of the substrate and coupled to the first cavity via a first lateral slot;

5       - a third cavity placed on the second side of the substrate and coupled to the second cavity via a second coupling slot passing through the substrate;

10       - a fourth cavity placed on the second side of the substrate and coupled to the third cavity via a second lateral slot;

- a fifth cavity placed on the first side of the substrate and coupled to the fourth cavity via a third coupling slot passing through the substrate; and

15       - a sixth cavity placed on the first side and coupled to the fifth cavity via a third lateral slot, the substrate being covered with an earth plane pierced by a fourth coupling slot, a second microstrip line being placed on the second side of the substrate above the fourth coupling slot so as to couple the said  
20 filter to the microstrip circuit.

7. Filter according to Claim 6, wherein the substrate is covered with an earth plane over the entire surface of the substrate in contact with the cavity, with the  
25 exception of the coupling slots.

8. Outdoor transmission unit which transposes a signal from an intermediate band into a transmission frequency band, the said unit comprising a substrate on  
30 which a circuit in microstrip technology is produced, the said circuit comprising amplification means, transposition means and filtering means, wherein at least three mutually coupled resonant cavities, the filter being coupled to the circuit, and wherein at  
35 least one cavity lies on one side of the substrate and at least one other cavity lies on the other side of the

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substrate.

9. Unit according to Claim 8, wherein the side of the cavity lying against the substrate is electrically  
5 closed by an earth plane supported by the substrate.

10. Unit according to Claim 9, wherein the coupling between at least two cavities lying on either side of the substrate takes place via a slot in the earth plane  
10 or planes separating the said cavities.

11. Unit according to Claim 10, wherein the substrate is cut at the slot and the edges of the slot are metallized.  
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12. Unit according to Claim 9, wherein the coupling between the microstrip circuit and one of the access cavities of the filter takes place via a slot in the earth plane of the said cavity, the said slot being  
20 placed beneath an open-circuit microstrip line.

13. Unit according to Claim 8 wherein the filter comprises:

- a first cavity placed on a first side of the  
25 substrate, the substrate being covered by an earth plane pierced by a first coupling slot, a first microstrip line being placed on a second side of the substrate above the coupling slot so as to couple the said filter to the microstrip circuit;

30 - a second cavity placed on the first side of the substrate and coupled to the first cavity via a first lateral slot;

- a third cavity placed on the second side of the substrate and coupled to the second cavity via a second  
35 coupling slot passing through the substrate;

- a fourth cavity placed on the second side of

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the substrate and coupled to the third cavity via a second lateral slot;

5       - a fifth cavity placed on the first side of the substrate and coupled to the fourth cavity via a third coupling slot passing through the substrate; and

10       - a sixth cavity placed on the first side and coupled to the fifth cavity via a third lateral slot, the substrate being covered with an earth plane pierced by a fourth coupling slot, a second microstrip line being placed on the second side of the substrate above the fourth coupling slot so as to couple the said filter to the microstrip circuit.